CLAIMS

What is claimed is:

1. A method, comprising:

partitioning a group of pixels, corresponding to a group of values, into a plurality of segments, with each of the segments including a plurality of rows of the pixels;

halftoning a first plurality of values, corresponding to a first one of the plurality of rows in a first one of the plurality of segments, to form a first plurality of error terms; and

halftoning, using at least one of the first plurality of error terms, on a second plurality of values corresponding to a second one of the plurality of rows in a second one of the plurality of segments, after completion of the halftoning on the first plurality of values, to form a second plurality of error terms.

2. The method as recited in claim 1, wherein:

the first one of the plurality of segments and the second one of the plurality of segments include equal numbers of the pixels.

3. The method as recited in claim 2, wherein:

the first one of the plurality of segments exists adjacent to the second one of the plurality of segments within an image formed by the plurality of segments; and

a boundary at an interface between the first one of the plurality of segments and the second one of the plurality of segments forms a substantially straight line within the image;

4. The method as recited in claim 3, wherein:

the boundary exists substantially perpendicular to the plurality of rows of the pixels.

1   5. The method as recited in claim 4, wherein:

2   the first one of the plurality of rows and the second one of the

3 plurality of rows exist in alignment within the image.

1   6. The method as recited in claim 5, wherein:

2   the halftoning includes error diffusion halftoning.

1   7. The method as recited in claim 6, wherein:

2   halftoning of ones of the plurality of rows in the first one of the

3 plurality of segments, other than the first one of the plurality of rows, occurs

4 contemporaneously with halftoning of ones of the plurality of rows in the

5 second one of the plurality of segments, other than the second one of the

6 plurality of rows.

1   8. The method as recited in claim 1, wherein:

2   the first one of the plurality of segments includes ones of the pixels

3 included in the second one of the plurality of segments.

1   9. An apparatus, comprising:

2   a first processing device to perform halftoning on a first set of values

3 corresponding to a first set of pixels;

4   a second processing device to perform halftoning on a second set of

5 values corresponding to a second set of pixels, with ones of the first set of

6 pixels located adjacent to the second set of pixels and with ones of the second

7 set of pixels located adjacent to the first set of pixels; and

8   a bus arranged for transferring a third set of values, from the

9 halftoning of ones of the first set of values corresponding to the ones of the first

10 set of pixels, to the second processing device and for transferring a fourth set of

11 values, from the halftoning of ones of second set of values corresponding to the

12 ones of the second set of pixels, to the first processing device.

1   10. The apparatus as recited in claim 9, wherein:

2   the halftoning includes error diffusion halftoning.

1   11. The apparatus as recited in claim 10, wherein:

2   the third set of values includes error terms generated from the error

3 diffusion halftoning of the ones of the first set of pixels; and

4   the fourth set of values includes error terms generated from the error

5 diffusion halftoning of the ones of the second set of pixels.

1   12. The apparatus as recited in claim 11, wherein:

2   the first set of pixels and the second set of pixels each include equal

3 numbers of the pixels, with the first set of pixels and the second set of pixels

4 included within an image; and

5   with the ones of the first set of pixels adjacent to the ones of the

6 second set of pixels within the image.

1   13. The apparatus as recited in claim 12, wherein:

2   a boundary at an interface between the ones of the first set of pixels

3 and the ones of the second set of pixels forms a substantially straight line within

4 the image.

1   14. The apparatus as recited in claim 13, wherein:

2   the first set of pixels includes a spatial arrangement into a first

3 plurality of rows forming a first segment of the image; and

4   the second set of pixels includes a spatial arrangement into a second

5 plurality of rows forming a second segment of the image, with the ones of the

6 first set of pixels forming a first column adjacent to a second column formed

7 from the ones of the second set of pixels, with the boundary at the interface

8 between the first column and the second column.

1   15. The apparatus as recited in claim 14, wherein:

the first plurality of rows includes a first row located on a first edge of the first segment and the second plurality of rows includes a second row located on a second edge of the second segment, with the first row aligned with the second row in the image; and

the first processing device includes a configuration to complete the error diffusion halftoning on the first row before the second processing device begins the error diffusion halftoning on the second row.

16. The apparatus as recited in claim 15, wherein:

the first plurality of rows includes a third row located adjacent to the first row in the first segment;

the second plurality of rows includes a fourth row located adjacent to the second row in the second segment;

the second processing device includes a configuration to begin the error diffusion halftoning on the second row before the first processing device completes the error diffusion halftoning on the third row; and

the first processing device includes a configuration to complete the error diffusion halftoning on the third row before the second processing device begins the error diffusion halftoning on the fourth row.

17. The apparatus as recited in claim 16, wherein:

the first processing device includes a first halftone processor and the second processing device includes a second halftone processor.

18. The apparatus as recited in claim 9, wherein:

the halftoning includes error diffusion halftoning.

19 The apparatus as recited in claim 18 further comprising:

a third processing device to perform halftoning on a fifth set of values corresponding to a third set of pixels; and

a fourth processing device to perform halftoning on a sixth set of

5   values corresponding to a fourth set of pixels, with ones of the third set of

6   pixels located adjacent to the fourth set of pixels, with ones of the fourth set of

7   pixels located adjacent to the third set of pixels, and with the bus coupled to the

8   third processing device and the fourth processing device for transferring a

9   seventh set of values, from the halftoning of the ones of the third set of pixels

10   to the fourth processing device, and for transferring an eighth set of values,

11   from the halftoning of the ones of the fourth set of pixels, to the third

12   processing device.

1   20 The apparatus as recited in claim 19 wherein:

2   the third set of values includes error terms generated from the error

3   diffusion halftoning of the ones of the first set of pixels;

4   the fourth set of values includes error terms generated from the error

5   diffusion halftoning of the ones of the second set of pixels;

6   the seventh set of values includes error terms generated from the error

7   diffusion halftoning of the ones of the third set of pixels; and

8   the eighth set of values includes error terms generated from the error

9   diffusion halftoning of the ones of the fourth set of pixels.

1   21 The apparatus as recited in claim 20, wherein:

2   the first set of pixels, the second set of pixels, the third set of pixels,

3   and the fourth set of pixels each include equal numbers of pixels, with the first

4   set of pixels, the second set of pixels, the third set of pixels, and the fourth set

5   of pixels included within an image.

1   22. The apparatus as recited in claim 21, wherein:

2   a first boundary formed at a first interface between the ones of the

3   first set of pixels and the ones of the second set of pixels forms a substantially

4   straight line within the image; and

5   a second boundary formed at a second interface between the ones of

6   the third set of pixels and the ones of the fourth set of pixels forms the

7   substantially straight line within the image.

1   23. The apparatus as recited in claim 22, wherein:

2   the first set of pixels includes a spatial arrangement into a first

3   plurality of rows forming a first segment;

4   the second set of pixels includes a spatial arrangement into a second

5   plurality of rows forming a second segment, with the ones of the first set of

6   pixels forming a first column adjacent to a second column formed from the ones

7   of the second set of pixels, with the first boundary at the interface between the

8   first column and the second column;

9   the third set of pixels includes a spatial arrangement into a third

10   plurality of rows forming a third segment; and

11   the fourth set of pixels includes a spatial arrangement into a fourth

12   plurality of rows forming a fourth segment, with the ones of the third set of

13   pixels forming a third column adjacent to a fourth column formed from the ones

14   of the fourth set of pixels, with the second boundary at the interface between

15   the third column and the fourth column.

1   24. The apparatus as recited in claim 23, wherein:

2   the first plurality of rows includes a first row located on a first edge of

3   the first segment, the second plurality of rows includes a second row located on

4   a second edge of the second segment, the third plurality of rows includes a third

5   row located on a third edge of the third segment, the fourth plurality of rows

6   includes a fourth row located on a fourth edge of the fourth segment, with the

7   first row, the second row, the second row, the third row, and the fourth row

8   aligned within the image;

9   the first processing device includes a configuration to complete the

10   error diffusion halftoning on the first row before the second processing device

11   begins the error diffusion halftoning on the second row;

12   the second processing device includes a configuration to complete the

13   error diffusion halftoning on the second row before the third processing device

14   begins the error diffusion halftoning on the third row; and

15   the third processing device includes a configuration to complete the

16   error diffusion halftoning on the third row before the fourth processing device

17   begins the error diffusion halftoning on the fourth row.

1   25. The apparatus as recited in claim 11, wherein:

2   the first set of pixels includes a third set of pixels and the second set

3   of pixels includes the third set of pixels, with the ones of the first set of pixels

4   located adjacent to the third set of pixels and the ones of the second set of

5   pixels located adjacent to the third set of pixels.

1   26. The apparatus as recited in claim 25, wherein:

2   the first processing device includes a configuration to transfer a fifth

3   set of values, corresponding to a first subset of pixels of the third set of pixels

4   included within the first set of pixels, to the second processing device using the

5   bus;

6   the second processing device includes a configuration to transfer a

7   sixth set of values, corresponding to a second subset of pixels of third set of

8   pixels included within the second set of pixels, to the first processing device

9   using the bus;

10   the first processing device includes a configuration to perform the

11   error diffusion halftoning on the sixth set of values; and

12   the second processing device includes a configuration to perform the

13   error diffusion halftoning on the fifth set of values.

1   27. An imaging device, comprising:

2   an interface arranged to receive data, corresponding to an image, from

3   a computer;

4   a processor configured to generate color values, corresponding to

5   pixels forming the image, using the data received from the interface;

6   a processing system arranged to receive the color values and including

a first processing device to perform halftoning on a first set of values, included in the color values, corresponding to a first set of pixels included in the pixels forming the image to form a first set of halftone values, a second processing device to perform halftoning on a second set of values, included in the color values, corresponding to a second set of pixels included in the pixels forming the image to form a second set of halftone values, with ones of the first set of pixels located adjacent to the second set of pixels and with ones of the second set of pixels located adjacent to the first set of pixels and a bus coupling the first processing device and the second processing device for transferring a third set of values from the halftoning of the ones of the first set of pixels to the second processing device and for transferring a fourth set of values from the halftoning of the ones of the second set of pixels to the first processing device;

an image forming mechanism configured to form the image using the first set of halftone values and the second set of halftone values; and

memory to store the color values, the first set of halftone values, and the second set of halftone values.

28. The imaging device as recited in claim 27, wherein:

the halftoning includes error diffusion halftoning;

the third set of values includes error terms generated from the error diffusion halftoning of the ones of the first set of pixels;

the fourth set of values includes error terms generated from the error diffusion halftoning of the ones of the second set of pixels;

the first set of pixels and the second set of pixels each include equal numbers of the pixels, with the first set of pixels and the second set of pixels; and with the ones of the first set of pixels adjacent to the ones of the second set of pixels within the image; and

a boundary at an interface between the ones of the first set of pixels and the ones of the second set of pixels forms a substantially straight line within the image.

1   29. An inkjet printer for forming an image on media using ink,
2   comprising:
3   a first printhead positioned to eject the ink onto the media for a first
4   portion of the image;
5   a first printhead driver configured to generate a first set of electrical
6   signals, used by the first printhead for the ejection of the ink, from a first set of
7   halftone values;
8   a first halftone processor configured to perform error diffusion
9   halftoning on a first set of values corresponding to a first set of pixels included
10 in the first portion of the image to form the first set of halftone values;
11   a first memory to store the first set of values and the first set of
12 halftone values;
13   a first memory controller configured to transfer the first set of values
14 and the first set of halftone values to and from the first memory and the first
15 halftone processor;
16   a first processor coupled to the first memory controller and the first
17 halftone processor;
18   a second printhead positioned to eject the ink onto the media for a
19 second portion of the image;
20   a second printhead driver configured to generate a second set of
21 electrical signals, used by the second printhead for the ejection of the ink, from
22 a second set of halftone values;
23   a second halftone processor configured to perform error diffusion
24 halftoning on a second set of values corresponding to a second set of pixels
25 included in the second portion of the image to form the second set of halftone
26 values;
27   a second memory to store the second set of values and the second
28 set of halftone values;
29   a second memory controller configured to transfer the second set of
30 values and the second set of halftone values to and from the second memory
31 and the second halftone processor;

32   a second processor coupled to the second memory controller and the

33 second halftone processor;

34   a third printhead positioned to eject the ink onto the media for a third

35 portion of the image;

36   a third printhead driver configured to generate a third set of electrical

37 signals, used by the third printhead for the ejection of the ink, from a third set of

38 halftone values;

39   a third halftone processor configured to perform error diffusion

40 halftoning on a third set of values corresponding to a third set of pixels included

41 in the third portion of the image to form the third set of halftone values;

42   a third memory to store the third set of values and the third set of

43 halftone values;

44   a third memory controller configured to transfer the third set of values

45 and the third set of halftone values to and from the third memory and the third

46 halftone processor;

47   a third processor coupled to the third memory controller and the third

48 halftone processor;

49   a fourth printhead positioned to eject the ink onto the media for a

50 fourth portion of the image;

51   a fourth printhead driver configured to generate a fourth set of

52 electrical signals, used by the fourth printhead for the ejection of the ink, from a

53 fourth set of halftone values;

54   a fourth halftone processor configured to perform error diffusion

55 halftoning on a fourth set of values corresponding to a fourth set of pixels

56 included in the fourth portion of the image to form the fourth set of halftone

57 values;

58   a fourth memory to store the fourth set of values and the fourth set of

59 halftone values;

60   a fourth memory controller configured to transfer the fourth set of

61 values and the fourth set of halftone values to and from the fourth memory and

62 the fourth halftone processor; and

63   a fourth processor coupled to the fourth memory controller and the
64   fourth halftone processor;
65   a bus arranged to transfer error terms from performing the error
66   diffusion halftoning between the first processor and the second processor,
67   between the second processor and the third processor, and the third processor
68   and the fourth processor.

1   30. The inkjet printer as recited in claim 29, wherein:
2   the first set of pixels and the second set of pixels include common
3   ones of the pixels;
4   the second set pixels and the third set of the pixels include common
5   ones of the pixels; and
6   the third set of pixels and the fourth set of the pixels include common
7   ones of the pixels.

1   31. A halftoning apparatus, comprising:
2   first means for halftoning on a first set of values corresponding to a
3   first set of pixels;
4   second means for halftoning on a second set of values corresponding
5   to a second set of pixels, with ones of the first set of pixels located adjacent to
6   the second set of pixels and with ones of the second set of pixels located
7   adjacent to the first set of pixels; and
8   means for transferring arranged to transfer a third set of values, from
9   the halftoning of ones of the first set of values corresponding to the ones of the
10   first set of pixels, to the second means for halftoning and for transferring a
11   fourth set of values, from the halftoning of ones of second set of values
12   corresponding to the ones of the second set of pixels, to the first means for
13   halftoning.